

REMARKS

In the Office Action of October 16, 2006 Claims 1-24 were pending for consideration with Claims 25-42 being withdrawn from consideration. Claims 25-42 have been canceled by the present amendment. Each of Claims 1-24 was rejected under 35 U.S.C. 103(a) as allegedly obvious over U.S. Pat. No. 5,772,756 (hereinafter “Davies”) alone and Davies in view of U.S. Pat. No. 3,179,979 (hereinafter “Bundy”). Each of these rejections is addressed in turn below.

Rejections under 35 U.S.C. § 103

Davies

The Examiner has rejected claims 1-17 under 35 U.S.C. 103(a) as allegedly obvious over Davies. Claim 1 of the present invention is drawn toward a “high pressure *system*” and not an apparatus. Specifically, the claimed system includes a “plurality of high pressure members” and “a reaction assembly” which is assembled such that “a bulk raw material diffusion direction [] is oriented substantially perpendicular to gravity.” The pressure members and the reaction assembly, in combination, make up the claimed invention.

“Intended Operation” and “Article Worked Upon”

The case law cited in the Office Action restates “Expressions relating the *apparatus* to contents thereof during an intended operation are of no significance in determining patentability of the *apparatus claim*.” (emphasis added) *In re Thibault*, 164 U.S.P.Q. 666, 667 (Bd. App. 1969). Applicant respectfully submits that this case law is not applicable to the presently claimed *system*. The subject of the Thibault dispute was an apparatus including “a reservoir...molten condition.” Specifically, the particular reservoir was used during a molten condition of its contents. This is a classic example of the appropriate prohibition on claiming different “intended uses” for known apparatuses. In contrast, the claimed system of the present invention includes affirmative components which are required to be present in order to satisfy the claim. The “expressions” of the instant claims are more than “relating to the contents thereof.” In particular, the contents of the plurality of high pressure members are positively claimed as “a reaction assembly” having a particular arrangement of materials to form a collective system. In other words, the above quote specifically prohibits “expressions relating the apparatus to contents thereof.” However, the presently claimed “apparatus” is a system where the “contents”,

i.e. the reaction assembly, are part of the apparatus and not a separate “expression relating the apparatus to the contents thereof.”

Furthermore, Applicant asserts that the case law of In re Young is distinguishable from the present inquiry. Specifically, In re Young states that “claim 6...includes the articles operated upon by the machines, that is, to quote from the claim, “concrete reinforced structures”...as a part of the combination.” 25 U.S.P.Q. 69, 70 (CCPA 1935). In this case, the Applicant attempted to include a “concrete reinforced structure” as part of the claim in order to impart patentability over the prior art. This is apparently rooted in the fact that certain “articles operated upon” by the claimed apparatus cannot be “claimed” such as large fixed structures like “concrete reinforced structures.” In re Otto is no different in that this case prohibited imparting patentability through claiming “an elastically resilient core member for hair curlers.” 136 U.S.P.Q. 458, 459 (CCPA 1963). Specifically, this case states that “appellant’s structure claims pertain only to a core or pad member and recite no means for attaching it to the hair.” In other words, the intended use with curling hair was of no patentable weight since the actual structure was not distinct from the prior art. It would seem self evident that hair could not be claimed and cannot therefore act as a patentable limitation in a claim. In contrast, the present invention includes a “reaction assembly” which is part of the structure that Applicant has specifically claimed. Therefore, Applicant respectfully submits that the claimed invention is a system and that the reaction assembly is part of this claimed system. Thus, the reaction assembly is not an “intended use” for the claimed machine or an “article operated on by the [claimed] machine.”

Merely Shifting the Position of the Parts

Applicant respectfully submits that the “material is important in a system claim.” In the Office Action, the Examiner stated that the “orientation of the material can not be used to determine the patentability of the claims when it does not affect the structure of the apparatus. It has been held that by merely shifting the position of the parts without changing the operation of the mechanism will not render the claims patentable and the placement of the mechanism is an obvious matter of design choice.” *In re Japikse*, 181 F.2d 1019, 86 U.S.P.Q. 70 (CCPA 1950) and *In re Kuhle*, 188 U.S.P.Q. 7, 526 F.2d 553 (CCPA 1975). Applicant respectfully submits that the above characterizations of this case law are misleading and do not accurately apply the holdings of those cases to the present invention.

In particular, *In re Japikse* actually states that “there would be no invention in shifting the starting switch disclosed by Canon to a different position since the operation of the device would not thereby be modified.” 181 F.2d 1031. Similarly, *In re Kuhle* states “that the particular placement of the contact provides no novel or unexpected result.” 526 F.2d 555. According to the court in each case, it was their assessment that the particular rearrangement of parts did not impart patentability since the operation of the device did not change. Neither case provides a broad general rule stating that merely shifting position or orientation can never be used to impart patentability to a claimed invention. In fact, *In re Japikse* qualifies the limit of shifting parts by inquiring whether the “operation of the device” was modified. Similarly, *In re Kuhle* stipulates that a rearrangement which provides novel or unexpected results may impart patentability.

In contrast to the claimed invention in each of the above cases, the present invention includes a “rearrangement” which significantly affects the operation of the claimed system. As thoroughly described by Applicant, the specific arrangement of the reaction assembly in the claimed unconventional manner indeed provides a number of changes in the heat transfer, material diffusion, and growth conditions during operation. The following passages are representative of the changed operation and unique results thereby obtained.

“Orienting the reaction assembly in this manner can avoid detrimental effects of gravity on the molten catalyst, e.g. convection, hence increasing available volumes for growing high quality crystals.” See page 3, lines 27-29 of the filed specification.

“a horizontal orientation of the assembly can help to reduce problems associated with differences in density and temperature gradients during diamond synthesis. For example, during synthesis of diamond, the catalyst is substantially molten such that low density (3.5 g/cm³) tends to float on the more dense molten catalyst (density greater than 8 g/cm³). Moreover, the molten catalyst may flow upward via convection, if the lower portion of the molten catalyst is at a higher temperature than an upper portion. Such flow of molten catalyst or diamond is not desirable, e.g., under the temperature gradient method of diamond synthesis, convection can increase diffusion of carbon solute sufficient to disturb the growth rate of the seeded

diamond resulting in non-homogeneous crystal formation and defects.” See page 29, lines 5-14.

“diffusion of raw material is increased by convection flow of molten catalyst. The rapid rising of heated raw material accelerates growth of the crystals at the upper portions sufficiently to entrap catalyst metal and form other inclusions resulting in a poor quality crystal. See page 15, lines 2-5.

As clearly described above, the claimed invention having a thermal gradient oriented perpendicular to gravity and the associated structural arrangement results in increased reaction volumes (i.e. higher throughput) and increased crystal quality. Thus, the claimed invention is a unique system having a novel arrangement of parts with a resulting “different operation of the device.” The structure and operation of the device are different from the Davies reference. The rejections of Claims 2-16 are similarly based on incorrect application of the above case law. Specifically, in the instant case, the reaction assembly constitutes a structural limitation of the claimed system and the arrangement of parts provides changed operation of the device. Therefore, the claimed invention is deemed patentable over the cited references for at least these reasons. Applicant respectfully requests that the rejections based thereon be withdrawn.

Davies in view of Bundy

Claims 18-24 were rejected under 35 U.S.C. 103(a) as allegedly obvious over Davies in view of Bundy. As mentioned in a previous Office Action response, the three criteria for establishing a *prima facie* case of obviousness include that the asserted references as modified or combined must: 1) teach or suggest each and every element of the claimed invention; 2) provide motivation for the modification or combination asserted; and 3) provide a likelihood of successfully making the modification or combination. Applicant respectfully submits that the cited references fail to teach or suggest each and every element and provide no motivation to make the proposed modification necessary to arrive at the claimed invention.

As described above, Davies fails to render the claimed invention obvious. In particular, nothing in Davies teaches or suggests the claimed system and orientation of the reaction

assembly. Bundy does nothing to remedy this defect and therefore the combination fails to establish a *prima facie* case of obviousness.

Further, Bundy fails to teach a split die device as claimed in Claim 18. Specifically, part (c) requires “a plurality of force members operatively connected to the plurality of die segments and configured to apply a plurality of discrete forces to the plurality of die segments.” As can be seen, the claim requires multiple force members which contribute corresponding multiple discrete or separate forces. In contrast, Bundy provides a single collective force to the ram segments using a hydraulic pressure zone. Bundy states “FIGS. 1 and 2...define an annular hydraulic pressure zone 43 between the pistons 37 and cylinder member 36” such that “during operation, high pressure hydraulic fluid is introduced into the cylinder assembly into volume 43 which forces ram segments 27, 28, 29, 30, 31, and 32 radially inward,” See col. 3, lines 19-20 and 63-67. The fluid within the annular hydraulic pressure zone acts as a single source of pressure to engage the ram segments. Therefore, Bundy fails to teach or suggest the claimed split die device of Claim 18.

Further, nothing in either the Davies or Bundy references teaches or suggests modifying the respective teachings so as to arrive at the claimed invention. In particular, at least two such modifications would be required. First, the reaction assembly needs to be assembled and oriented in the claimed manner with the bulk diffusion direction perpendicular to gravity. Second, the plurality of die segments would need a corresponding plurality of discrete forces. Neither Davies nor Bundy provide any such motivation or suggestion which would lead someone skilled in the art to arrive at the claimed invention. Further, nothing in these references teaches the desirability of modifying in such a manner without using Applicant’s own disclosure. Therefore, Applicant respectfully requests that this rejection be withdrawn.

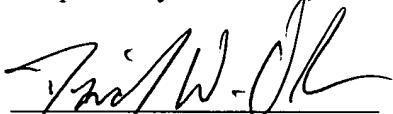
CONCLUSION

In view of the foregoing, Applicants believe that claims 1-24 present allowable subject matter and allowance is respectfully requested. If any impediment to the allowance of these claims remains after consideration of the above remarks, and such impediment could be removed during a telephone interview, the Examiner is invited to telephone Mr. Erik S. Erickson, or in his absence, the undersigned, at (801) 566-6633, so that such issues may be resolved as expeditiously as possible.

Please charge any additional fees except for Issue Fee or credit any overpayment to Deposit Account No. 20-0100.

Dated this 16th day of January, 2007.

Respectfully submitted,



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